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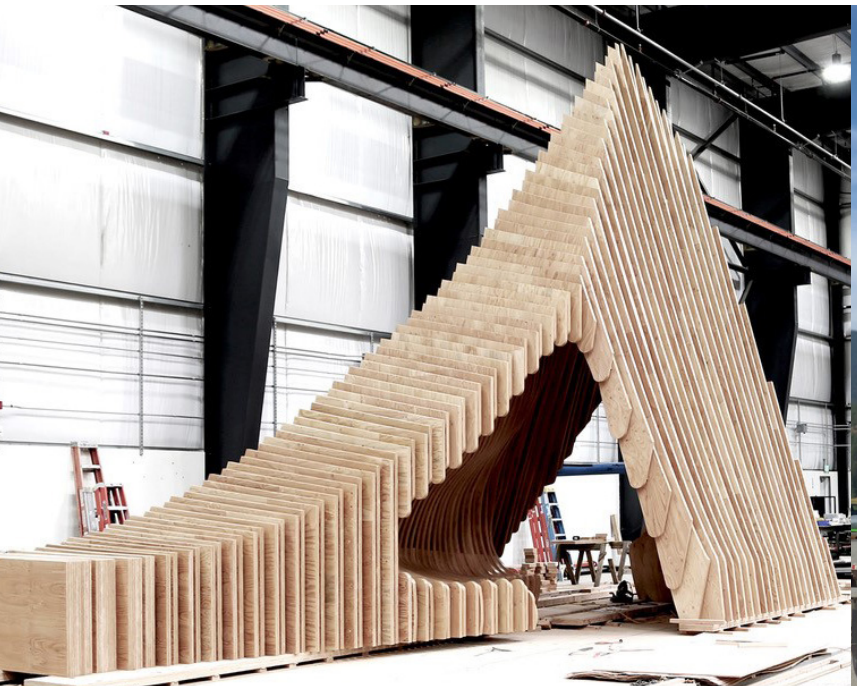

Left: A pavilion exhibit showcasing CNC cutting capabilities. Courtesy photo by Freres Lumber. Right: CNC-cut CLT panel ready for delivery to a building site. Courtesy photo by Vaagen Timbers.

CNC Machines Putting Mass Timber on the Cutting Edge

Computer numerical control (CNC) machines are at the heart of a technical revolution in mass timber. CNC allows tools like saws, drills, lathes, and 3D printers to operate with an unmatched degree of precision.

“The advances we’re making with mass timber would be impossible without CNC,” says Tyler Freres, vice president of sales at Freres Lumber in Lyons, Oregon. “CNC has helped us to dramatically extend the variety of products we make with our patented mass plywood panel.”

Freres Lumber, along with Vaagen Timbers and the TallWood Design Institute, were awarded U.S. Department of Agriculture (USDA), Forest Service Wood Innovations grants to offset the cost of CNC machines.

Research and Training To Showcase CNC Capabilities

The TallWood Design Institute is a collaboration between Oregon State University’s College of Forestry and Engineering and the University of Oregon’s College of Architecture. In addition to running testing and design projects with mass timber companies, the institute offers courses for architects and builders to encourage the use of CNC machines.

“CNC allows mass timber to achieve cost parity with other building materials. You can prefabricate specific pieces of mass timber and then deliver it to a construction site, saving time and money,” says Iain Macdonald, director of the TallWood Design Institute.

CNC Innovation Speeds Assembly

Freres Lumber uses its CNC machine to customize its mass plywood panel (MPP) products, which were tested and refined with the help of technical direction from the TallWood Design Institute. Mass timber products like MPP offer advantages when it comes to speed of assembly and precision work.

Once fabricated, the mass timber product is cut to the required shape and size for the end application using CNC saws. CNC allows for cutting in almost any direction with the precision necessary to form openings and other specific features. To streamline production, CNC operations can be linked to computer-aided design and computer-aided manufacturing software.

These CNC-inspired manufactured mass timber products can then be assembled and shipped directly to a construction site. Preassembly means less time is required on the construction site.

The precision that CNC machines bring to engineering mass timber also enhances the natural strength of the wood, while adding dimensional stability. Mass timber is already approved for use in 18-story buildings in some jurisdictions.

CNC Machines Helping To Stimulate Markets for Mass Timber

Vaagen Timbers, in Colville, Washington, is taking advantage of its CNC machine to produce cross-laminated timber (CLT) panels and glue-laminated timber panels and beams called glulam. These innovative products are made up of multiple individual layers of lumber that are glued together.

"CNC machines are beyond a game-changer. You can do things like put tongue and groove on the edge of panels. Our CNC machine has become an integral part of our process. We use it for every project it allows us to offer solutions that continue to amaze all of us. Most importantly, it does so at a speed that allows us to keep up with rapidly changing demands of the marketplace," says Russ Vaagen, founder and chief executive officer of Vaagen Timbers.

Mass Timber: Sustainable at Its Core

Mass timber products support green buildings without compromising strength or stability. They also produce fewer carbon dioxide emissions than other building materials, like steel and concrete, and are renewable. As CNC machines expand the range of mass timber applications and products, it should mean good news for climate change mitigation.

Not only do they have a lower carbon footprint than other building products, but mass timber products are also able to use small-diameter trees. Creating demand for these smaller trees is helping to mimic natural thinning effects that ultimately reduce the risk of fire.

"The 20th century was the age of concrete and steel, and the 21st century is going to be the age of wood," Macdonald says.

FAST FACTS

- Computer numerical control (CNC) machines are at the heart of a technical revolution in mass timber.
- CNC allows tools like saws, drills, lathes, and 3D printers to operate with an unmatched degree of precision.
- CNC machines are helping stimulate markets for mass timber.
- CNC allows mass timber to achieve cost parity with other building materials.
- CNC allows ease of assembly on the job site, with unmatched accuracy!

More Information

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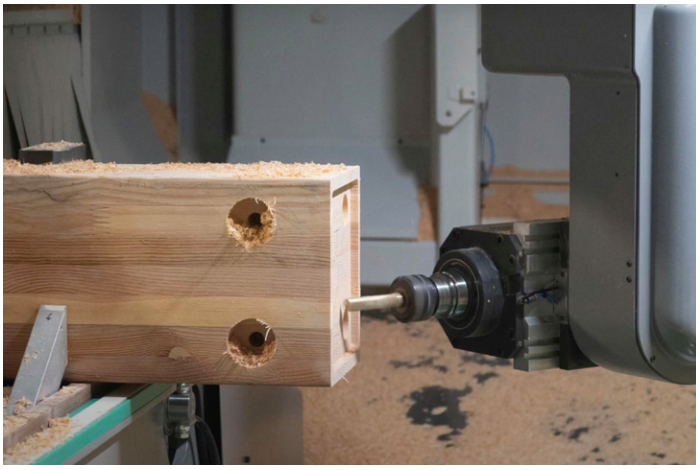

CNC machine, used to cut intricate details in CLT, and glulam beams. Courtesy photo by Vaagen Timbers.